

1. A drilling apparatus that includes a drilling string comprised of a drilling pipe, in a borehole, and a drilling bit, said apparatus comprising:

a formation fluid sampling and hydraulic testing tool;

a first packer member disposed about said drilling pipe in said borehole above said sampling and testing tool; and

means associated with said first packer member for effecting extension and retraction of said first packer member to and from sides of said borehole.

2. A drilling apparatus according to claim 1, wherein said first packer member includes a bladder that is adapted to be expanded and deflated to effect extension and retraction respectively of said first packer member.

3. A drilling apparatus according to claim 2, wherein said means for effecting extension and retraction includes a pressure storage means containing a pressurized gas or other medium, and a vacuum storage means.

4. A drilling apparatus according to claim 3, wherein a first valve is associated with said pressure storage means and a second valve is associated with said vacuum storage means, wherein said first valve is adapted to release compressed gas from said pressure storage means to effect expansion of said bladder and hence

extension of said first packer member, and wherein said second valve is adapted to subject said bladder to vacuum and hence to effect retraction of said first packer member.

5           5.       A drilling apparatus according to claim 3, wherein said means for effecting extension and retraction is in the form of two concentric tubular members disposed about said drilling pipe, wherein one of said tubular members forms said pressure storage means, and wherein the other of said tubular members forms said vacuum storage means.

10           6.       Drilling apparatus according to claim 4, wherein a second packer member is disposed about said drilling pipe in said borehole below said sampling and testing tool, and wherein further means are associated with said second packer member for effecting extension and retraction of said second packer member to and from sides of said

15       borehole.

7.       A drilling apparatus according to claim 6, wherein said second packer member includes a bladder that is adapted to be inflated and deflated to effect extension and retraction respectively of said second packer member.

20           8.       A drilling apparatus according to claim 7, wherein said means for effecting extension and retraction includes a pressure

storage means containing a pressurized gas or other medium, and a vacuum storage means.

5 9. A drilling apparatus according to claim 8, wherein a first valve is associated with said pressure storage means and a second valve is associated with said vacuum storage means, wherein said first valve is adapted to release compressed gas from said pressure storage means to effect inflation of said bladder and hence extension of said second packer member, and wherein said second valve is adapted to subject said bladder to vacuum and hence to effect retraction of said second packer member.

10 10. A drilling apparatus according to claim 1, wherein a bi-directional pressure reduction valve mechanism is disposed about said drilling pipe, above said first packer member, for controlling pressure in the drilling pipe and the testing tool.

15 11. A method of operating a drilling apparatus that includes a drilling string comprised of a drilling pipe, in a borehole, and a drilling bit, said method including the steps of:

disposing a formation fluid sampling and hydraulic testing tool in said drilling pipe above said drilling bit;

20 disposing a first packer member about said drilling pipe in said borehole above said sampling and testing tool; and

extending and retracting said first packer member to and from a boreface of said borehole prior and subsequent to a sampling and testing operation by said tool.

5 12. A method according to claim 11, which includes the step of inflation and deflating a bladder of said first packer member to effect extension and retraction respectively of said first packer member.

13. A method according to claim 12, wherein a pressure storage means containing a pressurized gas or other medium, and a vacuum storage means, are provided for effecting said extension and retraction of said first packer member.

14. A method according to claim 13, wherein a first valve 81 associated with said pressure storage means is adapted to release compressed gas therefrom to effect inflation of said bladder and hence extension of said first packer member, and wherein a second valve is associated with said vacuum storage means for subjecting said bladder to vacuum and hence to effect retraction of said first packer member .

15 15. A method according to claim 14, which includes the further step of disposing a second packer member about said drilling pipe in said borehole between said sampling and testing tool and said drilling bit, wherein said second packer member is extended and retracted to and from sides of said borehole.

16. A method according to claim 15, wherein said extension and retraction of said second packer member is effected by expansion and deflation of a bladder thereof.

5 17. A method according to claim 16, wherein a pressure storage means containing a pressurized gas or other medium, and a vacuum storage means, are provided for effecting extension and retraction respectively of said second packer member.

10 18. A method according to claim 17, wherein a first valve 81 associated with said pressure storage means is adapted to release compressed gas from said pressure storage means to effect expansion of said bladder and hence extension of second packer member, and wherein a second valve associated with said vacuum storage means is adapted to subject said bladder to vacuum and hence to effect retraction of said second packer member.

15 19. A method according to claim 11, wherein pressure in the drilling pipe and the testing tool is controlled by a bi-directional pressure reduction valve mechanism that is disposed about said drilling pipe, above said first packer member.

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